POWER

1. Fails occasionally. Fault 1: Resolder each connection on the line panel.
Fault 2: Check the line end stage transformer (diode divisor).

2. Dead. Fault 1: Check R4059 (BZX79C27).
Fault 2: Check dry joints around 3D6, 2D7, 15A15, 15A16 and R3106.
Fault 3: Check R3106, 820, R2010 (5K6), R4044 (120K), R3120 (15K) and R4059 (15K).
Fault 4: HT ok. Check if D2015 S/C.
Fault 5: FS1301/2 blown. Check D4091 and D4092.
Fault 6: FS4037 blown. Check D3133, TR2150, C4040, D4021, C4029 and C3135.
Fault 7: 148V power supply voltage is around 90V. Sound IC TDA1521 is defective (4822 209 73853).
Fault 8: By slowly turning up the power supply voltage, safety switches on at about 50V. Replace diode D6657 (LLZC20) (4822 130 81143).
Fault 9: [Power supply kit and C9501 already replaced unsuccessfully]. BUT18AF switches quickly. Try replacing T7651, T7652, D6653, D6646 and D6649 on secondary side.
Fault 10: Replace booster capacitor BU508AF (10,082µF/1600V) which is defective.
Fault 11: C2262 (10µF/16V) S/C through which the sound protection comes into action and shuts the power off.
Fault 12: Check D138 on line panel and replace fuse 1A on power supply panel.
Fault 13: Check IC2510 (TDA1590).
Fault 14: Check BR101/BRY56.
Fault 15: Replace transistors T85 and T86.
Fault 16: [No line drive, HT ok]. Check TR7455 for dry joint.
Fault 17: [HT is 20V]. Check Q7284 (BC858), audio. Check C2526 (6.8nF) in EW antibreathing bias circuit.
Fault 18: Check "S" correction C2550 (390nF) for S/C.
Fault 19: Check C2546 (8.2nF) and C2550 (390nF).
Fault 20: Replace mains fuse (1600) which is shattered, BUT18AF chopper transistor (7625) S/C, CNX83A optocoupler (7614) which has failed and the four bridge rectifier diodes (6602-5) S/C.
Fault 21: LLZ-C20 diode D6657.
Fault 22: [Power supply ok]. Replace line output transformer. If after this replacement part of OSD has shifted to the left with the first letter missing, check width control R3524 (10K) for O/C. Replace Wickman fuse T1534 (315mA).
Fault 23: [148V is low]. Check line output transformer T5545.
Fault 24: [NICAM model]. Check chopper and line output transistors for S/C and check C2546.
Fault 25: [Fuse shattered]. Fit power supply service kit.
Fault 26: [HT low at 20V]. Set starts up when pin 3 on line output transformer is isolated. Check 12V rail for S/C. Check Q7284.

3. The appliance is tripping (intermittently).
Fault 1 Check line output transformer (diode split).

4. HT varies intermittently.
Fault 1 Check IC2510 and R4059 (15K).

5. When switching on, the high voltage part hums. If bridge 9507 is unsoldered, the TV starts. No control function is possible.
Fault 1: Check D6638, D6653, D6644, D6669 and T7651.
Fault 2: Check the microprocessor.

6. No start up of PSU.
Fault 1: Fit complete repair set, code 4822 310 20489.
Fault 2: Replace TR7654 (BC817). Finally check with error detection poster.
Fault 3: Driver transformer T5541 S/C on primary.
Fault 4: Check 2620.
Fault 5: Check transistor Q7284 (BC858) in audio protection stage.
Fault 6: Replace line scan coupling/S-correction capacitor C2550 (390nF/250V).

7. Snowy picture, no 33V voltage.
Fault 1: Check the R3003.

8. Resistors R3661 and R3662 are in open circuit.
Fault 1: Replace D6620/R3622/R3623 with a 100R resistor and a 1N4148 diode.

9. BUT 18AF is defective and is destroyed when the appliance is switched on.
Fault 1 Check R3610, R3611, R3608, R3609, D6611, D6648, T7612, T7615 and T7616.

10. The power supply is noisy in stand-by.
Fault 1 Check L51619.

11. The voltages are too low.
Fault 1 Check D6649 and R3649.

12. BUT18AF is destroyed after some time.
Fault 1 -4.5V should be present on the D6617 anode.

13. No signal on the BUT11AF collector.
Fault 1: Check D6630, T6670, D6669 and D6653. Check also R3621, C2620 and the BU with 0.6V at its base.
14. +120V instead of +148V. Fault 1: Change T7651.5
Fault 2: Check D6611, D6612, D6613, D6614 (LL4148) (CMS) is s/c when switched on. Check transitors T7612/15/16) and BUT18AF CNX83A and the semi conductors before and after. Plug the power supply of the TV to the variac. Increase the voltage and check +148V.
Fault 3: Fit PSU repair set. Part no 4822 310 20489.

15. Sometimes the BUT18AF goes defective.
16. Goes into safety mode.
Fault 1: T7656 is defective, R3560 and R3818 O/C.
Fault 2: [20V on C2630 + 146V]. Power supply functions if line time base connector is disconnected]. If base of T7655 is at 0.7V, check safety mode. Check mini fuse 1534 (E/W), D6561 (E/W), D6592 (line transformer circuit) and T7284 (BC858).
Fault 3 : [Abnormal pulses on line BU before going into safety mode. Line transformer has been checked]. No S/C. Capacitor C2550 (390nF) is dry or O/C in line deflection circuit.
Fault 4: [Fuse Si1534 blows after 1 min.] Dry joint at pin 1 of L5549.
Fault 5: D6657 leaky.
Fault 6: [Approx 0.6V at base of T7655.] R3661 blows. Check if D6639 (1N4148) S/C; if so, check D6669 (1N4148) and thyristor 6670 (SFORSD43).

17. The standby thyristor blows.
Fault 1: D6662 near the primary side is in open circuit.

18. +16V flashover.
Fault 1: Check D2 6657.

19. Smoke from +12V resistor.
Fault 1: Check IC7315 (TDA8490).

20. 6616 CNX has been changed. At 90V appliance functions correctly.
Fault 1: Use a power supply kit SBC7020. Ref: 482231020489.

21. Power supply crackles when power supply is low.
Fault 1: Check D6617 (BZX85C6V2) and D6645 (1N4148).

22. 100V power supply is approx 35V.
Fault 1: Check D6649 (1N4148) and T7652 (BC558C) if the base voltage of T7655 is approx 0V and that of 7654 0.6V.

23. Appliance starts up with the variac until it reaches 100V and then the appliance fails.
Fault 1: Check leaky D6653.

24. Set functions with the variac but BUT11AF blows when appliance is plugged in.
Fault 1: Check the circuit of D6616, R3650, R3610, D6611, T7612, T7615 and T7626.

25. Very low secondary voltages.
Fault 1: Check D6649 and R3649.

26. BUT11AF blows after some time.
Fault 1: There should be 4.5V on the anode of D6617.

27. Appliance only functions until the 120V is reached with the variac. When the mains voltage is increased the appliance fails.
Fault 1: Check T7651 (BC558C).

28. Stand-by lamp does not light up and will not switch on.
Fault 1: Diode 6657.

29. The appliance is dead. Light zooming sound near the reversing transformer.

Fault 1: Charge power supply only with 100W lamp. If the power does not function, or if it does not function well, use service kit SBC7020 (4822 310 20489).

30. BUT18 is defective.
Fault 1: Service kit has been fitted. Power comes on with variac but continues regulating. Pulse width meter does not function. Replace all components within. After rectifying, Pin 19 transformer is 2V instead of 9V, Pin 20 is 14V instead of 30V, remaining voltages are fine.
Also replace, on the secondary side, T7651, T7652, D6653, D6646, D6649.

31. Defective line transistor. Note: After replacement of the line transistor, the appliance functions momentarily. Testing the power supply with an incandescent lamp is o.k. Replace the line transformer and the capacitors around it (checked for short circuit while charged, switches into safety mode)
Fault 1: Check line control. Appliance can go into safety mode when e.g. the beam current is too high via diode 6590 and TS7591 or over voltage protection via 6591-6592 for E-W via 6560 and 6561.

32. Power supply problem. When appliance is switched on BUT18AF is shortcircuited. Power supply kit has already been changed. Primary resistors have already been checked.
Fault 1: Check the power supply on the variac. Replace the optocoupler and change C2625 (1.5nf) on BUT18AF which is short circuited. Check if the LL4148 (chip) is short-circuited when switched on. Check the transistors above and below the CNX. Check 3624, 3626 100K.

33. Appliance starts poorly and the thyristor 6670 goes defective in stand-by.
Fault 1: C2620 open circuits. When measuring on the BUT18AF the power oscillates at a very high frequency.

34. BUT18 blows at 100V on the variac. Power supply transformer kit has been changed.
Fault 1: Check or replace the diodes and CMS transistors in the tuning unit. Also check the zener.

35. In irregular circumstances BU508AF (3 days-4 weeks) are s/c. IC TDA 2579, C2545 1.2n, C2546 8.2n, C2547 22nF have already been changed.
Fault 1: a) Completely fit Rep Kit 4822 310 20491.
b) Change coil 4822 157 53903 and
coil 4822 156 21125 in primary PSU.
Fault 2: Possibly driver transformer is defective.
Fault 3: Replace T7654 (BC 817) on the secondary side.

36. LED lights up for a moment. TV is dead. Light on the power supply sometimes functions.
Fault 1: Power supply is in protection, because 20V zenerdiode pos. no.
6657 leaks.

37. Defective BUT and fuse in the PSU. After replacing the appliance runs for several days until the fault occurs again.
Fault 1: Fit power supply repair set SBC7020 (New Version).
Fault 2: Replace T7654, D6646, R3616, R3615 and optocoupler 7614 with the service kit. If there is ringing on the oscillogram replace C2605.
Fault 3: If U148 adjuster has safety varnish, also replace this.

38. No voltage, dark picture, voltage pulsates.
Fault 1: Check IC2510.

39. The appliance does not function, fuse FS1301/2 blows.
Fault 1: Check D4091 and D4092.

40. Appliance does not function, fuse TS4037 blows.
Fault 1: Check D3133, TR2150, C4040, D4021, C4029 and C3135.

41. BUT11 becomes defective after 3 days of use.
Fault 1: PTC resistor is defective.
Fault 2: Replace the mains diodes in the power supply.
Fault 3: Opto CNX83 and power supply bridge zener 5.1V has been replaced. In appliance (G110) there is a BUT18AF instead of a BUT11, BUT18AF = 4822 130 61407.
Use a BUT18AF (note the codenumber), a "BUT18" (unselected) can cause problems.
Advice: Use a Philips sops repair kit 4822 310 20489.

42. Appliance works fine for hours, but after switching off with the remote control the BUT18 and mains fuse go defective.
Fault 1: Replace the diodes of the +300V rectifier
Fault 2: Check the feedback capacitor on the BUT18.

43. The output transistor of the power supply is defective. BUT11AF or 2SC3973B.

Fault 1: Usually the cause is the CNX83A. Replace the defective transistor as well as the optocoupler (CNX83A). Code number CNX83A: 4822 130 82034, BUT11AF: 4822 130 42679, BUT18AF: 4822 130 61407, 2SC3973B: 4822 130 60851.

44. The resistors 3661 and 3662 burn in standby, TS7625 is also defective sometimes.
Fault 1: Check 6620, 3622 and 3623 and the solder joints,

45. Sops power supply repeatedly becomes defective.
Fault 1: Replace the audio-output stage IC7270 (TDA1521/N4).
Codenumber TDA1521/N4: 4822 209 73853.

46. Power repair has been replaced. Same fault after 10 days.
Fault 1: Was a new repair kit used ? TR 7654 SMD transistor nust be replaced at the same time. This is contained in newer kits. 7654 is a BC 817.

47. Appliance hums and after a few seconds horizontal BU fails.
Fault 1: Check +148V with load and C2546, C2545 and IC7470. Check if there are any o/c near the driver transistor.

48. Output transistor goes defective when switched on.
Fault 1: Replace HSP cable from transformer to picture tube.

49. Set not regulating after SOPS re-build of secondary side of PSU.
Fault 1: Check 30 volt line. If this is only coming up to 11 volts check D6653 (4822 130 80446) in secondary side of SOPS. Some PCBs are marked showing this diode the wrong way round, the manual may also indicate it like this. Reinsert diode with the cathode going to the emitter of TS652 as indicated in the circuit diagram.

50. Will not start; high tension low at 20 volts.
Fault 1: Fault suspected in line output stage. Disconnect pin 3 of LOT transformer. If HT comes to normal and line drive is achieved, suspect fault on 14 volt or 12 volt line from line output stage. Try disconnecting R3281 in location D4 of PCB. If set starts up, check T7284 audio protection transistor - BC858 SMD (5322 130 42012).

51. Over-voltage circuit active.
Fault 1: Remove connector G15 and connect lamp to + 148 Volt. Lamp is on. Replace TS7545 (BU508AF; 4822 130 61265) and replace S5545 (line transformer; 4822 140 10384).

52. BUT18 was defective. After fitting power supply repair set BUT18 is defective once more.
Fault 1: Replace Repair Set again and remove the line end stage and load with a 100W lamp. It could be that the split diode is defective.
Fault 2: Replace Pos. 7654, BC817.
Fault 3: Replace optocoupler and base transistor.

53. BU508 defective after switching channel (when appliance is warm).
Fault 1: Replacing capacitors, TDA and/or line transformer does not solve the problem. Use Philips repair kit.

54. Power supply BU blows after a few days.
Fault 1: [Kit has been changed]. In the primary measure the chip resistors which have changed value. If BU blew several times also check those of the secondary.
Fault 2: Check the solder joints of the line transformer tuning capacitors. Check if the power supply is stable.

55. BU508 blows one min after HT transistor (BU508AF) has been replaced. Picture OK during this one min. Transistor does not become hot.
Fault 1: Check pulse on collector for max. 1200/1300V. Check flyback capacitor for loose leg. Check connections of line transformer.

56. No start up; +148V = +/- 20 volts.
Fault 1: Check line output stage. Disconnect pin 3 of line ouput transformer. Check if +148V goes to normal and line drive is achieved. Reconnect pin 3 of line ourput transformer and try disconnecting R3281 (location D4 of PCB). If set starts up, suspect T7284 audio protection transistor - BC858 SMD (5322 130 42012).

57. Switching transistor in power supply goes short circuit (BUT18). The mains switch should be replaced when fitting the SOPS repair kit, worn contacts in the switch can cause spikes when the set is first switched on from being cold.

58. Defective switching transistor in the Sops supply
Fault 1: If the switching transistor in the sops supply must be replaced it is also necessary to replace the opto coupler CNX83A. For an optimal, reliable repair it is advisable to replace a number of power supply components by using a sops kit: SBC7020 4822 310 20489.

59. Blows chopper transistor.
Fault 1: Check transistor 7146 for dry joints.

Circuit ref: L6.
Fault 2: Check 7654 transistor and replace 7614 opto-coupler IC

60. Red light flashes for approximately 3 seconds then zero.
Fault 1: Check pin 14 of line output transformer for dry joint. If ok faulty IC7705 TDA2579A/N8
Circuit ref. D4

61. No sound, no picture, no 140V on collector of 7925.
Fault 1: Dry joint on pin 2 of 5921.
Circuit Reference: C16 and D15

62. Chopper transistor (BUT18AF) fails if appliance is switched on from standby.
Fault 1: Drive signal at base is incorrect. Replace D6612 and D6614.
Fault 2: Replace D6646, D6649, TR7655, TR7656 and TR7654 at the same time.
Fault 3: Replace SOPS kit austauschen (ES7059 4822 310 10708).
Fault 4: Change PTC/NTC.

63. Thyristor pos. 6670 fails.
Fault 1: Replace R3622 and R3623 51R with 100R. Replace D6622, likewise D6669 and D6644.

64. No function, voltage ok.
Fault 1: Check D2015 for S/C.

65. PSU fails after a short time (S/C of BUT18AF).
Fault 1: [Both BYD33M have already been replaced]. Order repair kit from Philips (SMD parts are contained in the kit).
Warning: Use newest variants; crucial components contained.
Fault 2: Occasionally transistor 7654 (BC817) O/C.

66. Power supply failure.
Fault 1: The complete repair kit from Philips needs to be fitted even if some of the original components give a reading which is ok.
Fault 2: If problems still arise with the subsequent failure of the BUT18AF chopper transistpr then there is a modification you could use. Add 2 BYD73B diodes (part no 4822 130 60778) in series between the b/e of the chopper transistor, anodes to the base. Then make sure that transistor 7654 is type BC817, not type BC847.
Fault 3: In the event of a failure in the switch-mode power supply, the switching transistor IC7625 may have failed. In this case it is recommended that the opto-coupler IC7614 should also be replaced.

Chassis	7625	code no.
G90AE and B	BUT11AF	4822 130 42679
G110 (all)	BUT18AF	4822 130 61407

7614	code no.
CNX83A	4822 130 82034
CNX83A	4822 130 82034.

67. Cannot be switched to standby. After the first attempt appliance is blocked. Processor and EEProm are new.
Fault 1: Check 5V. Check C2661 and D6665. Check Power-On-Reset. (bridge diode 6665? for a short time.) appliance now runs perfectly, transistor 7663 CB858 can be replaced.

68. After fitting full power supply repair kit, set will still not work into a dummy load.
Fault 1: Lift one end of either L5631 or R3502 and repeat the test with a dummy load. If all secondary voltages from PSU are now correct check T7594 BC848, R3596 15ohm, T7591 BC858.

69. No regulation set will power up from variac but may come on in standby.
Fault 1: C2645 1µF is low in value.

70. Power supply breaks down.
Fault 1: Philips supply a complete repair kit. You must replace all the parts in the kit. Use kit type SBC7020 part No 4822 310 20489. Also check the values of resistors 3615, 3616, 3619, 3652, 3653 and 3654. Disconnect the line scan coil plug and fit a dummy load. Start up the power supply gradually, using a variac: check that the 140V line doesn't rise excessively as the voltage is increased. A problem in the line output stage can blow up the power supply- this will be proved by the line output transistor being S/C. Any arcing that occurs in the mains plug, the on/off switch or the deguassing posistor can also upset the power supply. Either way, before you return the set give it a soak test in standby and with the picture.

71. Set dead, power supply refuses to start. Also intermittent start and no standby
Fault 1: Check D6657 LLZ-C20 diode in the sound protection system. Can go leaky.

72. Nicam chassis, if you get one of these sets with S/C, chopper and line output transistors.
Fault 1: Remove and inspect C2546 (8.2nf)2KV. Replace if there is any evidence of heat stress.

73. If after fitting the recommended power supply kit the set works ok until put into standby then after a few seconds there is a pop and the BUT18AF goes S/C.
Fault 1: Change D6646, D6649, TR7655, TR7656 and TR7654 also recheck D6614 and D6612.

74. Blows chopper transistor at switch on, even when all the bits in the repair kit have been fitted but the power supply works all right if brought on slowly by use of a variac.
Fault 1: Change the on/off switch and the posistor in the degaussing circuit.

75. Set is dead but the power supply works all right when tested with a dummy load.
Fault 1: Remove and inspect capacitors C2546 (8.2nf) and C2550 (390nf) in the line output stage. Replace them if their wires are loose or there are signs that the capacitors are overheating internally.

76. Line BU keeps failing.
Fault 1: Measure operating voltages. Resolder line transformer in every case. Check for dry joints. Replace chip capacitor and parallel capacitor. For the BU use only original spare parts (4822 130 61265).
Fault 2: Replace power supply repair set, BU508AF, pulse capacitors on the BU, By228, BYW95 and diode split.
Fault 3: Picture position adjustment is defective. Transistor S/C. Resistor is defective.

77. Appliance is dead (NICAM models).
Fault 1: Check chopper and line output transistors for short circuit and also check C2546.

78. Switching transistor T7625 has failed.
Fault 1: Check optocoupler 7614 (CNX83A).

79. No power HT = 119V.
Fault 1: Replace 2645 1PF capacitor.
Fault 2: Replace 7594 and 7593.

80. No power supply, protection circuit triggered.
Fault 1: Replace transistor 7284, leaky in sound stage.

81. Blows chopper transistor when switching on with remote.
Fault 1: 7612 is leaky.

82. Blows mains fuse after 1-2 hrs.
Fault 1: Replace leaky C2605.

83. No quick start pulse.
Fault 1: Check 7305, TDA8451.
Fault 2: 7350, TDA8390 faulty (12V on PIN 9 when disconnected).

84. No 9V. Fault 1: 2549 is defective (O/C).
Fault 2: Check 7350 chip transistor, 12V rail on collector.

85. Fails in standby.
Fault 1: Replace D6646, D6649, TR7655, TR7656 and TR7654 together.

86. Various components burn as a result of defective SOPS.
Fault 1: [Thyristor 6670 amongst others]. Replace series network of D6622, R3622 and R3623 by serial network of diode 1N4148 and resistor (100R) (SFR25, part no. 4822 050 21001).

87. Dead. PTC blown.
Fault 1: Add a special PTC (NTC). Used in G110 and K40:2322, 662, 98012.

88. No regulation on 148V, pot 6635 does not work.
Fault 1: Check zener diode D6665 (4.7V). Check T7637, D6637, T7652, C2645, and opto IC7614. Check HT loads. Lift T7545 (BU508). Apply load (100W lamp) and check if 148V is ok. Suspect T7540.

89. Intermittent start and no standby.
Fault 1: Check zener diode D6657 (20V) for reverse leakage.

90. Appliance runs ok, but if remote used to switch to standby, appliance goes dead.
Fault 1: Check zener diode D6657.

91. Line output transistor short circuit.
Fault 1: Check C2546 (8.2nF/2K).

92. Appliance is dead, purring noise from power supply.

Fault 1: Replace line output transformer.

93. Switch off after 1/2 min.
Fault 1: B56 line is high. Diode 6561 is defective. Part no. 989401.

94. Intermittently goes dead.
Fault 1: Despite the rivets around the joints on the line output transformer, these can become dry jointed, especially pin 18.

95. Power supply repair kit. Part no. 4822 310 20489.
This kit should guarantee against any further problems. Be prepared to replace quite a number of SMDS.

96. Takes approx 1 minute to come on, will not switch to standby, sound mutes but pulsating picture remains.
Fault 1: Replace R3617 (220R) on primary side of power supply.

97. S/C in line output stage.
Fault 1: If line output transistor and transformer OK, check scan coupling/correction capacitor C2550 (390nF) for S/C or O/C.

98. Dead, just buzzing.
Fault 1: [Power supply OK]. Replace line output transistors, TR7594 (BC848) and TR7593 (BC858).
Fault 2: Check scan coil coupling/S correction capacitor C2550 for S/C.

99. Power supply blows when put into standby.
Fault 1: Check chopper transistor's base drive circuit BUT18AF, R3619 (10R) and L5619.

100. BUT11AF S/C. After power supply kit fitted and set run in standby. OK in normal run mode.
Fault 1: Check D6612 and 6614. Check drive waveform to BUT11, switch on delay possibly missing.

DEFLECT

Line pairing at top half of the picture
Fault 1 Check if C2072 (4µF) is open circuit.

Field roll.
Fault 1 Cracked PCB (left hand corner of T/B PCB C2072, C2080).

No control signal to IC7470 (TDA) and no line scanning.
Fault 1 There should be 9V present on pin 11 of the TDA2579 and 15625Hz on pin 15 of the TDA2579. If the frequency is incorrect, check C2452 (2.7nF).

Poor line synchronization.
Fault 1 Check the signal on pin 12 of the IC7470 (TDA2579) as well as C2467.

Raster compression.
Fault 1: Check 2.2mf C2509.

Field bounce with VCR.
Fault 1 C5010 (150µF) and C2039 should be 0,0039µF.

No synchronisation.
Fault 1: Replace:
TS 7364 (BC 858; 5322 130 42012)
IC 7470 (TDA 2579/N6; 4822 209 72363).
Fault 2: C7904 on the SVHS board is defective.

At times, no synchronization.
Fault 1: Check capacitor C2366 (100 nF; 4822 122 33496).

No vertical output.
Fault 1: Frame drive transistor 7805 BC547.
Circuit ref. M21.

Line amplitude varies according to picture content. 148V does not move,
Fault 1: [CNX83 replaced]. Check 7594, 7593, 2594, 2593 and 3595. Check sync and signal: line drive. Suspect 7470.

No line deflection, only a vertical line. PSU switches off due to there being too much load.
Fault 1: Operate appliance with reduced mains voltage. BU508AF and transformer 5549 heat up after some time. Swing-out transients of the line transformer visible on the oscillograms. Capacitor 2550 (390nF) is without capacitance.

Line amplitude varies according to light intensity.
Fault 1: [Line transformer, E/W transistor and line capacitor have been changed]. Change C2526 (6.8nF) in the E/W.

Picture linearity is incorrect.
Fault 1: C2509 (2.2µF) is defective.

Only half a picture.
Fault 1: Fault in the vertical deflection. Check C2609 and replace if necessary.

S/C in the line output stage (7645).
Fault 1: C2546 is defective.

Picture takes a long time to appear (several mins). Sandcastle ok. On fuse 1534, 4V instead of 14V. P3525 (picture width) is difficult to adjust again.
Fault 1: Check on pin 3 of line transformer: 10Vpp. If ok, suspect 2580.

Low horizontal amplitude after protection circuit disabled by lifting leg of 6560.
Fault 1: 2549 defective (O/C).
Fault 2: 7591 leaky.

Difficult horizontal and vertical adjustment and sawtooth at the side.
Fault 1: Change IC7470 (TDA2579A).

Occasional stopping of frame scanning.
Fault 1: Transistor 7500 (BC33740) cuts out at the B-E junction (approx 5V between B and E).

Intermittent vertical scanning.
Fault 1: Check solder joints. Check on oscilloscope if 5V on C2661. If ok check T7500, T7503 and T7502. Suspect 2506, 2509 and D6502.

No horizontal sync. Picture is shifted to the right.
Fault 1: Horizontal sync circuit is defective. Check T7594, T7593 and pot R3595. Otherwise check C2594, C2593, D6594, D6593, R3594 and R3593.
Note: Before replacing components, check that storage capacitor C2546 is ok and that the solder joint of the EHT pins is in good condition.

Poor frame linearity when cold. Picture is distorted vertically.
Fault 1: Replace C2509 (2.2uF) and C2506 (470uF) on A2.

Field linearity is poor and width varies.
Fault 1: Check C2509 (2.2uF.50V) in field linearity feedback network.

Line output transistor blows occasionally. (Could be once a month).
Fault 1: Line output device must be a Philips BU508AF Part no. 482213061265. Also replace mains on/off switch as it can arc and blow chopper and line output devices. Resolder scan coil plug connection. Remove TX5541 line driver transformer, scrape its pins and refit. Also replace C2545 (1.2nF/2kV), C2546 (8.2nF) and C2550 (390F). If problem persists replace IC7470 (TD2579N7). Only use original Philips parts.
(D&D Television, Cheshunt, England)

No horizontal deflection.
Fault 1: [Output transistor, etc. ok.] Check C2550 (390nF) for O/C.

Intermittent partial field collapse.
Fault 1: Check chip resistor (1R) in emitter of field output transistor (BD234) on underside of PCB.

PICTURE

Slight hum bar.
Fault 1 Check D21 (27V zener).

Dark picture.
Fault 1 Replace IC73 TDA1412. Check output for 12 volts.

No picture, may be intermittent.
Fault 1 Check tube heaters alight. If not check FS155 holder for corrosion.

Hum on picture.
Fault 1 Replace D4061 (BZX79C27).

Excessive brightness.
Fault 1: Replace IC229 TBA560.

No luminance.
Fault 1 Replace V230 chrominance/ luminance control unit.
Fault 2 Check if D4090 zener is short circuit.

No picture (luminance).
Fault 1 Check D90 on power supply for leaky.

No picture or sound.
Fault 1: LT1 rail to the IF panel is absent. Replace D147 with a new diode.
Fault 2: Fault in the power supply. The ICs CNX83A (7615) and BC817 (7654) are defective.
Fault 3: Check T7039 and if necessary D6039.
Fault 4: Voltages are fine! Check IC507 (12V regulator) and TDA1412.
Fault 5: Voltage +148V is present. On pin 19 of SCART, no video signal. External signal supplied to pin 20 SCART is processed well. Replace U1000 (UV816; 4822 210 10365).
Fault 6: Clock pulse (8.86 Mhz) on Pin 28 IC7350 is missing. Replace Q1352 (4822 242 70323). Clock pulse (8.86 MHz) on pin 28 IC 7350 is present. Replace IC 7350 (TDA8390/n4; 4822 209 61027).
Modifications:
Remove R3340
Remove R3341
Change R3371 to 1.2 MOhm
Change R3372 to 680 kOhm
Remove D6336.

Low brightness (even after turning up the preset in the U200 module).
Fault 1 The voltage at pin 2 is very low but the 4.7V zener diode is ok. Check beam limiter transistor in the power supply which is leaky.

Field flyback line (intermittent).
Fault 1 Check C2156 (0,0022µF) dry joint.

Striations at LHS of screen.
Fault 1 Add ferrite bead to wire link between TAG14 of line output.

No sound or picture, EHT ok.
Fault 1 Check IC507 (12V regulator) and TDA1412.

No picture, eht ok.
Fault 1 D4090 (4V7Z), D6011 and TR2164 (BC148) must be checked.

Repeated failure of CRT.
Fault 1 Replace scan coils (arcing).

After switch on the picture is sometimes shifted and a black horizontal bar appears in the centre of the picture.
Fault 1 The solder bridge under chip capacitor C2460 may be the cause.
Leak from pin 12 of the TDA2579 timebase generator chip to the chassis.

Vertical striations at the left side of the picture on some receivers only.
Note: Sets mostly affected are those fitted with a .4 version of the CRT base panel.
Fault 1: The symptom can be greatly reduced or cured completely by removing link wire 9302 which is situated on the CRT base panel adjacent to connection 19G. This should be done in cases of specific complaints only. On NICAM receivers only, a further slight improvement may be achieved in a few cases by soldering links 9011 and 9126 to the earthed print on the component side of the main PCB.
Note: The .4 version of the CRT base panel can be identified by looking for the figure 4 which follows code no. 3111 253 3072 printed on the component side of the panel.

Vertical interference bars on the screen. No sound or picture.
Fault 1: Check the UV816 tuner.

One single line in the middle of the screen.

Fault 1: Check the R3570.

The picture fails and the screen is white.
Fault 1: If the value on pin 7 of the FBT is approximately 160V, the capacitor has a short with a neighbouring track.

Snowy picture, there is no 33V voltage.
Fault 1: Check the R3003.

No picture (dark screen), sound, or video and audio scart output. Does not respond to the commands from the remote control.
Fault 1: The +9V voltage is weak (+5V). Change pin 5 on the FBT of the F1559. Test Equipment: A voltmeter.

The screen is very white and may have flyback lines.
Fault 1: Check the IC 7380 (TDA 8153), positioned on the CRT board (video amplifier).

Green spot after viewing a white object on the screen.
Fault 1: Tune the beam current again.
Fault 2: Tune the G2s until the contrast reappears. If this does not work, change the cathode tube, which has been damaged by the contrast
voltage which is too high.

Vertical bars on channels 2 and 4
Note: For sets equiped with a .4 picture tube panel. On channel 2 and 4
vertical bars (spook) visible at the left side of the picture.
Fault 1: To solve this problem remove capacitors 2417, 2418 and 2419 on the picture tube panel and replace jumper 9302 by a capacitor of 1nF (4822 122 31746).

Interference lines when cold but not when warm.
Fault 1 Check TEA5101 A/P.

When warm, there is a raster fault on the left.
Fault 1 Change the IC7360 (TDA8452/N3).

Picture is correct in scart but poor in tuner.
Fault 1 Check the adjustment on the 5035 reel.

Picture fault in tuner and scart.
Fault 1 Check the earth on the quartz sheeting and the TDA8452.

Dark background and a band of colour on the right.
Fault 1 Check if the value of R3476 is 3.3K.

The sound is correct but there is no picture.
Fault 1 Check C2346 (100nF).

When warm, the raster pulls and the BU blows.
Fault 1 Check the C2459 capacitors.

Raster signal problem.
Fault 1 Check the video link on the SVHS board.

Sound is present but the screen is black. TDA8390 exchanges the power supply voltage correctly.
Fault 1: Raise the G2 level and check for the eventual presence of a horizontal white line. This means that the raster amplifier is defective.

White screen.
Fault 1: TEA5101 is defective.

Black horizontal lines.
Fault 1: C2500 (220mf) is in open circuit.

The video cuts out.
Fault 1: Check the S-VHS board.

The picture is blurred.
Fault 1: Check the focus setting of the three tubes.

Orange spots on the right of the screen.

Fault 1: The CRT is defective.

No sound or picture. Snowy screen (picture with test signal). Vertical interference bars.
Fault 1: Check the hyperband tuner UV816.

Black screen. Sound is correct.
Fault 1: Check C2346 (100nf) which leaks at pin 11 of TDA8390.

When warm, picture foldover and the line BU blows.
Fault 1: Check C2459 and C2460.

No sound or picture. Appliance appears to be in AV.
Fault 1: Check T7039, D6039 and T7039.

Picture leans too much to one side, Black line visible in the picture.
Fault 1: When replacing of TR7593 and 7594, they break down again immediately. The voltages 148,4V are both present. Replace D6594, D6593, T7594, T7593 and R3596.

No picture, only teletext.
Fault 1: Situation may occur after high voltage flash over or after lightening has struck (nearby). When appliance is switched on bypass R3348 for a short period of time. R3348 is between pin 9 IC7350 (TDA8390) and earth.

Picture appears after 5 mins.
Fault 1: [CRT board has been changed unsuccessfully]. Thermal shock on IC7350 (TDA8390)? Check the chroma path and in particular the Y signal (Pin 3 of IC7360).
Fault 2: [TEA5101 and TDA8390 have been replaced]. Check video signal on pin 5 of 7470. If ok, check control signal 7545 base: 12Vpp, collector: 142V. If missing, check 7540, 2630.

Picture flickers the first 5 minutes. Gradually becomes less but very visible in the dark portions of the screen.
Fault 1: Not a standard fault. Check VG2 setting and picture tube circuit.

Picture green and purple in the E/W direction.
Fault 1: Replace PTC.

Vertical lines in the left of the picture with high brightness.
Fault 1: This problem occurs especially on channel 2 with weak signals with the .4 picture tube panel model. Remove jumper 9302 on the picture tube panel, solder on the monocarrier, jumpers 9011, 9020, 9123 9126, 9212, 9320, 9322, 9327 and 9822 on the copper screening (component side), use good coaxial cable.

Local dooming, especially with high contrast.
Fault 1: Replace C7720 (TMP47C634N-2415) with TMP47C634N-2475/4822 209 62161. Fit a 220K resistor parallel to C2349. Change R3891, R3892 and R3922 in 1K2. Check if the VG2 is set at the correct value.

Local dooming / PP-settings.
Fault 1: When changing the PP-settings for brightness, contrast etc., the set values will not be stored in the memory. Usually they are higher in the memory. This may lead to problems like local dooming. Replace microprocessor TMP47C634/2412 with /2416 (4822 209 60941).

No teletext and scarcely visible OSD. If the appliance is switched to teletext, the regular picture vibrates.
Fault 1: IC TDA8390 does not switch over properly and must be replaced.

When switching on the appliance when it's cold, it takes about 35 seconds before the picture appears.
Fault 1: IC7465 (TEA5101A) on the picture tube print is defective.

Only snow in the picture.
Fault 1: 33V zener is defective if the frequency in the picture does not increase when searching, otherwise the microprocessor is defective.

Only grey picture after being struck by lightening. PSU is in working order and tuner has been replaced. TXT also runs.
Fault 1: Replace TDA 8390.

The lower half of the picture is missing. D.C voltages are correct.
Fault 1: Presumably IC7470.
Fault 2: Possible causes T7502, T7503, R3508, R3511, R3515, R3523, R3529, C2509, C2506. First of all check C2506 thermically. Does it fail often.

Picture fails several times when switching on from cold condition. Everything is ok after warming up.
Fault 1: Check C2366.

Very low contrast.
Fault 1: Check dc voltage on pin 7 of IC7350. If this voltage does not rise above 1.7 volts there could be a fault in the BCL line. Check/replace T7351 - BC848B (5322 130 41982).
Fault 2: Check/replace T7413 on the picture tube PCB (BC856B; 4822 130 60373).

At times no picture.
Fault 1: Check C2366 (100 nF; 4822 122 33496).

No picture, sound OK.
Fault 1: [Clock-pulse (8.86 Mhz) on pin 28 IC7350 not present]. Replace Q1352 (4822 242 70323).
Fault 2: [Clock-pulse (8.86 MHz) on pin 28 IC 7350 is present]. Replace IC 7350 (TDA8390/n4; 4822 209 61027).
Modifications:
remove R3340
remove R3341
change R3371 to 1.2 MOhm
change R3372 to 680 kOhm
remove D6336.
Fault 3: Check smoothing resistor R3375 (180R) for O/C on tube base panel and check RGB output chip IC7465 (TEA5101A/P.

Brightness too high, flyback line visible.
Fault 1: Replace IC 7465 (TEA 5101A/P; 4822 209 73832).

Picture distorted.
Fault 1: Vertical pulse incorrect.
Check capacitor C2500 (220 pF; 4822 122 31965).

Contrast variations with subtitling in sets with BL-CRT.
1) Add a SMD capacitor of 1nF - 5322 122 31647 between pins 3 and 4 of connector 20G of the CRT panel.
2) Add C2336 - 1nF - 5322 122 31647 between pins 3 and 4 of connector 14G on the mono carrier.
Modify R3715 into 220k - 4822 051 10224.
Adjust PP value of the contrast control to almost maximum.

White area visible on right side of screen in EXT1 mode of BL sets.
Remove the resistors 3462 and 3464. Add a potentiometer of 47K (4822 100 11371) on the position of R3461.

Ghosts and poor colours.
SAW filter 1016 (4822 242 72374).

Picture moved and a black bar in the middle of the screen.
Fault 1: Check solder bridge over C2460. Check Pin 12 in TDA2579.

Contrast adjustment inoperative, colour streaks.
Fault 1: Diode 6335 is defective (4822 130 80446).

Noise in picture.
IC7425 (TDA4565; 4822 209 71512) defective.

Dark picture and no sound.
Fault 1: Transistor 7545 (4822 130 61265) defective as pin 5541 in control
transformer was loose.

No picture, no sound.
Fault 1: No LT1 rail to IF panel. Replace D147 with a new diode.
Fault 2: Fault in power supply. ICs CNX83A (7615) and BC817 (7654) are defective.
Fault 3: Check T7039 and if necessary D6039.
Fault 4: Voltages ok. Check IC507 (12V regulator) and TDA1412.
Fault 5: Voltage +148V present. On pin 19 of scart, no video signal. External signal supplied to pin 20 scart is processed well. Replace U1000 (UV816; 4822 210 10365).
Fault 6: No clock pulse (8.86 Mhz) on pin 28 of IC7350. Replace Q1352 (4822 242 70323). Clock pulse (8.86 MHz) on pin 28 of IC7350. Replace IC 7350 (TDA8390/n4; 4822 209 61027).
Modifications:
Remove R3340
Remove R3341
Change R3371 to 1M2
Change R3372 to 680K
Remove D6336.

Fault 7: Check sound amplifier 7615 (TDA152Q/7).
Fault 8: Voltage stabiliser 7610 (L785Z4CV) is S/C. Each B19 and B18.
Fault 9: C2545 (1.2nF) is defective (burnt). Also replace C2546 (8.2nF).

Initially no picture no sound. Set comes "on" after a while.
Fault 1: Microprocessor 7200 TMP47C634N-2695 heat sensitive. Check 140Volt HT rail - (down to 70 to 80Volts).
Circuit ref. B6

No picture.
Fault 1: Faulty CRT. Check for a leakage between G1 and G2.

No sound, no picture, no 140V on collector of 7925.
Fault 1: Dry joint on pin 2 of 5921.
Circuit Reference: C16 and D15

No sound, no picture, blank raster.
Fault 1: 7350 BC 848
Circuit reference C2

No picture, no filament, no HT. Sound OK.
Fault 1: Drive transistor 7630 (= BC337) for HT transistor is defective.

No colour, dark picture, pulsating voltage.
Fault 1: Check IC2510.

No EE picture. Sound ok.
Fault 1: Replace C710 1000uf but there may also be a dry joint in IF block on earthing pad to can connected to a small blue surface mounted component near TR3. Resolder.

Red flash is seen when changing channels with VCR playback in the still or search modes or edit points in own recordings.
Fault 1: Reduce value of chip capacitors, C2434/5 from (.1UF) to (2.2nf) code No 4822-122-32999. These capacitors are on the main PCB adjacent to IC7425.

(NICAM model). When using scart socket, wrong picture is displayed.
Fault 1: Check IC7720 (TMP47C634), and ensure that it is the correct version.

No sync pulses for 5-10 mins then ok.
Fault 1: Replace C2580.

Intermittent no picture, no sound.
Fault 1: Replace micro 7550, S/C.
Fault 2: Replace transistor 7284 -leaky (in soundstage).
Fault 3: Replace transistor 7044.

Dark screen. FBT ok. Sound and OSD ok. Picture ok via scart.
Fault 1: Check TDA8390.

Dark screen. Green LED. No display and no BUS I2C. 5V on pin 42 of IC7720. Quartz ok.
Fault 1: Check 5V reset on T7663 (BC858).

1in band down left hand side of screen.
Fault 1: Replace C2593 (10uF) and C2594 (10uF).

No video switching via scart socket. Sound OK.
Fault 1: Replace TMP47C634-2676.

USEFUL INFO.

Quick diagnosis
A) Fault information on the screen FO offtime (mis). Blink LED indication 58 (oscilloscope).
Possible fault: Internal RAM fault.
Possible def. unit: IC7720.
B) Fault information on the screen F1, offtime (mis) Blink LED indication M7 (oscilloscope).
Possible fault: 14V operation voltage.

Possible def. units: IC7545, R3581, IC7540, R3580, IC7470 and D6580. C) C) Fault information on the screen F2 offtime (mis). Blink LED indication 235 (oscilloscope)
Possible fault: Internal timer fault.
Possible def. unit: IC7720.
D) Fault information on the screen F3, offtime (mis) Blink LED indication 469 (oscilloscope)
Possible fault: Channel selector fault.
Possible def. units: U1000.
E) Fault information on the screen F4 offtime (mis). Blink LED indication 958 (oscilloscope)
Possible fault: EE prom faults.
Possible def. unit: IC7770.
F) Fault information on the screen F5, offtime (mis) Blink LED indication 827 (oscilloscope)
Possible fault: Stereo decoder.
Possible def. unit: IC7220.
The fault information only appears when the appliance functions.
G) Fault information on the screen F6 offtime (mis). Blink LED indication 606 (oscilloscope)
Possible fault: Audio servo amplifier.
Possible def. unit: IC7770.
H) Fault information on the screen F7, offtime (mis) Blink LED indication 164 (oscilloscope)
Possible fault: TXT decoder.
Possible def. unit: IC7800, IC7820.
The fault information only appears when the appliance functions. If the picture is missing the off-time of the display LEDs can be checked using an oscilloscope to determine what fault has been produced.
The fault only occurs when the appliance functions. After turning off the mains switch the fault is no longer indicated but it is still present.

Receivers with fastext displaying the page header continuously when set is in subtitle mode (page 888).
Note: This has been happening since the BBC changed the CEEFAX format. Only observed on BBC recorded programmes with subtitles (subtitles on live programmes, and on independent television are not affected).
Fault 1 The BBC have agreed to suppress the header on future recorded subtitled programmes. However, many programmes are already "in the can" and could be transmitted at any time with the page header not suppressed. To accommodate this, the teletext microcomputer MAB8461P/W107 has been reprogrammed to suppress the page header when subtitles are being received.
The new version (MAB8461P/W196) is available from service under code no. 209 62479. In cases of specific complaint the new version may be fitted as a drop-in replacement.

A production change:
A production change has been introduced adding a shield to the main control micro processor to prevent the processor being influenced by external fields In future, replacements will be supplied as a kit comprising the processor shield and fitting instruction. The shield will also be available separately.
:Old mask No. Code No. `````````` ```````
:G90B/G110 TMP47C634N
:2412
:2414 209 73222
:2415 209 73854
:2416 209 60941
:2474 209 62161
:2475 209 62161
:2675 209 61152
:2676 209 63504
:New Mask No. Kit code No. `````````` ``````````
:2475 310 31844
:2475 310 31844
:2475 310 31844
:2475 310 31844
:2475 310 31844
:2475 310 31844
:2676 310 31845
:2676 310 31845
:Shield only. `````````
:Chassis Processor
:G110 TMP47C634N
:Code for shield ````````````
:466 82781

Transformation in K' (only for stereo versions).
Fault 1: Modify the following on the stereo decoder:
1171 filter = 3.5MHz
2182 capacitor = 680pF

2179 capacitor = 6.8nF
150pF capacitor should be parallel to C2181.

Television part- addition to parts list.
The EHT cable from the CRT to splitter (3) is available under code number 4822 320 20192. Please add to the parts list in the G110 PTV chassis service manual.

UP TMP47C634N2475 replaces all the previous micro processors.
Ref : 4822 209 62161.

PCD8582 and X2402 memory.
Fault 1: Two types of memory may be fitted if the wiring is adapted:
:1) PCD8582 : R3729=10K and C2724 = 2.7 nf.
:2) X2404 : remove R3729 and C2724.
:Put a strap in place of C2724.
:Ref C2404 = 4822 209 73313.

Replacement of TDA8451 (IC7305).
Fault 1: When replacing TDA8451 by TDA8451 N5, do not remove the 82K resistor between 14 and 18 on the circuit.

Adjustment black line matrix.
Note: When replacing the picture tube with a black line matrix type, the following adjustments have changed:
:GR2.1 - VG2 for 25 and 28" 135V.
:D16 - VG2 for 25 and 28" 135V.
:G110 and FL1.0 - no difference in regards to description in documentation. This is valid for tubes of the type A59...or A66EAK220X13.

Micro computers and screening plate.
Note: A higher failure rate of the microcomputer has been noticed. This is caused by static of the microcomputer housing. The static is caused by the strong electrical field of the picture tube. With all the appliances, the microcomputer needs to be supplied with a metal screening plate.

Sops repair set.
Note: Under the number SBC7020 a sops repair kit is available. If the components are originally manufactured in SMD, then replace R3622, 3623 with a single conventional 100Ohm and D6622 with a conventional 1N4148. These are included in the set.

Diode D6653 installation sops kit.
Note: In sops kits in which diode D6653 is included, make sure it is fitted the right way around. Valid for the new G110 (SVHS as well) chassis. D6653 and R3652 are located here practically next to each other. With the old G110 print layout the D6653 is closer to T7652, in this case the cathode of D6653 must be pointed towards pin 21 of the sops transformer 5625. If the diode is fitted incorrectly the power supply will not start up.

Connection of the loop system to the TV.
Note: A problem usually occurs when connecting a loop system to a modern TV. A solution is available from the hearing aid suppliers in the form of a specific loop system amplifier which is supplied from the mains and which functions with a scart or phono plug signal. On the advice of a specialist a large part of the cost is usually covered by insurance.

Method to check the power supply without blowing the BUT18AF.
Place a variac between the mains and the TV. Put probe of oscilloscope on the base of the power supply BU while progressively increasing the voltage of the variac. Watch the base signal.

Microprocessor/eprom screening plate.
Note: Connect the screening plate with the side of R3733 which is directed towards the front of the chassis.
:4822 466 82781

Replacing the TDA8390.
During production of the G90B and G110 chassis (all versions) the PAL decoder and RGB matrix IC (7350) TDA8390/N3 was replaced by TDA8390/N4 (code no. 4822 209 61027). These IC types are not directly interchangeable. When fitting a TDA8390/N4 in place of a TDA8390/N3, the following modification must be carried out:
G90B chassis

Pos. No.	Version N3	Version N4	Code No.
2352	12pF	15pF	4822 122 32504
3313	2M7	deleted	-
3336	3K3	3K9	4822 111 90571
3338	2K7	6K8	4822 111 90544
3340	3M9	deleted	-

3341 3M3 deleted -
6336 LL414B deleted -
G110 chassis all versions
3340 4M7 deleted -
3341 3M9 deleted -
6336 LL414B deleted -
3371 120K 1M2 4822 111 90409
3372 220K 680K 4822 111 90368.

Protection of T7625 (BUT18AF).
A production change is being introduced adding two diodes connected in series between the base and emitter of T7625 (anodes towards base). The type no. for the diodes is BYD73B service code no. 4822 130 60778.
Reason: To increase the protection of T7625.
Note: In cases of specific complaint this change can be applied in service. In addition, check that T7654 is a BC817 and not a BC847.

Control micro processors.
A production change has been introduced adding a shield to the control micro processor to prevent the processor being influenced by external fields. In future, replacements will be supplied as a kit comprising the processor, shield and fitting instruction. The shield will also be available separately.

Old mask no.	Code no.
CP90/110 TMP47C432P	
8187	-
8188	4822 209 72038
8189	4822 209 73665
New mask no.	Kit code no.
8188	4822 310 31849
8188	4822 310 31849
8189	4822 310 31851

Replacing the EEPROM.
The memory IC in these receivers has been replaced by type ST24C02CP (code no. 4822 209 62098). On some receivers however, the circuit will have to be modified. G90AE chassis - The ST24C02CP is a direct replacement for X2402 and no circuit changes are required. G90B/G110 chassis - all versions. If the ST24C02CP is fitted in place of an X2402 no circuit changes will be required. However if the device being replaced is a PCD8582P, the following change must be carried out:
1) Change C2724 (chip capacitor 2.7n) to a chip jumper code no. 4822 051 10008.
2) Remove chip resistor R3729. GR1-AX chassis .
When memory IC X2402 is replaced by type ST24C02CP, the 5 volt supply must be modified as described in Service Tips 216A. For the GR1-AX chassis only, the ST24C02CP is supplied complete with metal shield under code no. 4822 310 31886. The shield must be positioned over the EEPROM and soldered in place of link 9020. Note: This IC contains all the stored settings for channels, programmes and preferred customer settings. Consequently, when the new IC (EEPROM) is installed, the receiver will not be tuned to a programme and customer settings will be set to minimum. The set may appear dead giving the impression that the new IC is defective. Alternatively some receivers may be in standby or "store lock" mode at switch-on. Whenever a new EEPROM is fitted the set must be completely reprogrammed with channels and customer preferred settings.

Addition to parts list.
The EHT cable CRT to splitter (3) is available under code no. 4822 320 20192. Please add to the parts list in the G110 PTV chassis service manual.

Defective BUT.
With a defective BUT always replace the chip capacitors (blue) at the same time.

Replacement of line by new reference.
Hooked pin G2 is touching the earth which suppresses the beam limiter and gives the effect that the tube is pumping.

Microprocessor overview.
Note: uP code numbers with screening plate:
-Mask numbers: 2412, 2414, 2415, 2416, 2474, 2475: 4822 310 31927.
-Mask numbers: 2675, 2676: 4822 310 31928.

Start with interfering voltage.
Fault 1: Start with an interfering voltage is possible but should be handled with care. Apply +5V via a 200ohm resistor to the base of T7671.

Power supply breaks down.
Fault 1: Philips supply a complete repair kit. You must replace all the parts in the kit. Use kit type SBC7020 part No 4822 310 20489. Also check the values of resistors 3615, 3616, 3619, 3652, 3653 and 3654. Disconnect the line scan coil plug and

fit a dummy load. Start up the power supply gradually, using a variac: check that the 140V line doesn't rise excessively as the voltage is increased. A problem in the line output stage can blow up the power supply- this will be proved by the line output transistor being S/C. Any arcing that occurs in the mains plug, the on/off switch or the deguassing posistor can also upset the power supply. Either way, before you return the set give it a soak test in standby and with the picture.

Power supply repair set.
Part no. : 4822 310 20489

Service mode
This appliance has no service mode.

General info.
. Appliance manufactured in 1990.

Dead
P.s.u rebuild kit was required.

COLOUR

No colour.
Fault 1: Check C6062/6070 (0.33µF) alignment of L5630.
Fault 2: Check C2317, C2323 and C2324.
Fault 3: Attach extra ground wire to clip holding crystal (4.43MHz).

Loss of red, green or blue or excessive red, green or blue pictures.
Fault 1 Replace V1617 the G2 controls unit.

No colour, dark picture and HT pulsating.
Fault 1 Check IC2510.

Loss of one colour.
Fault 1 Open circuit print in control unit 1617.

PAL/SECAM chroma identification problem.
Fault 1 There is an open circuit between pin 4 of the IC7350 and TS7316. R3366 and D6336 should be present.

Purity fault.
Fault 1 Repeat adjustments of the G2 voltage.

In VCR there are only chroma lines.
Fault 1 Check the circuit D6336, T7316.

Chroma fault in SECAM.
Fault 1 C2315 must be checked.

No red signal.
Fault 1 Check C2443.

No blue signal.
Fault 1 C2442 must be checked.

The picture turns red.
Fault 1 Check the diode D6410 on the tube board.

The picture turns green.
Fault 1 Check diode D6411 on the tube board.

The picture turns blue.
Fault 1 Check the diode D6412 on the tube board.

No PAL chroma.
Fault 1: Check the metal top of the quartz.

Red is the dominant colour.
Fault 1: Darkness level adjustment of G2. CRT is defective.

Orange spots on the right of the screen.

Fault 1: The CRT is defective.

Poor chroma identification in Pal/Secam. On channels 5, 6 or with VCR, blue or red bands.
Fault 1: Check the connection between pin 4 of IC7350 (TDA8390) and collector TS7316. Check TS7316, R3366 and D6336.

Occasionally the colour disappears.
Fault 1: Screening of the crystal (pos. 1352) is poorly, or not at all, soldered. It should be soldered to the component side. To replace IC7350 (TDA 8390) the crystal must be removed. Don't forget to solder the screening of the crystal on the component side.

Coloured flash on channel change and VCR features.
Fault 1: It is possible that on the G110 chassis a coloured flash may be seen when syncs are interrupted. For example when changing channels or on VCR playback in "still" or "search" modes. In the case of home video recordings, the edit points may be marked by a colour flash. In cases of specific complaint, the phenomena can be reduced by changing the value of C2434 and C2435 from 100nF to 2.2nF (chip components on the main PCB adjacent to IC7425). Code no. 2.2nF capacitor (chip component) 4822 122 32999.

Coloured spots in picture (local dooming).
Fault 1: Service solution:
Mount a resistor of 220k ohms in parallel with capacitor 2349 and replace resistors 3891, 3892 and 3922 by 1k2 ohm types.
Modification introduced in products.
Sets with production number G05/AG04.
was R3415 becomes for 25": 12k 22k
(4822 116 52257)
for 28": 15k (4822 116 52244)
was R3448 becomes for 25": 8k2 8k2
(4822 051 10822)
for 28": 6k8 (4822 051 10682)
was R3449 becomes for 25": 12k 15k
(4822 051 10153)
for 28": 12k (4822 051 10123)
was R3891 1) becomes for 25": 3k3 820E
(4822 051 10821)
for 28": 820E (4822 051 10821)
was R3892 1) becomes for 25": 3k3 820E
(4822 051 10821)
for 28": 820E (4822 051 10821)
was R3922 1) becomes for 25": 3k3 820E
(4822 051 10821)
for 28": 820E (4822 051 10821)
1) Only to be modified in teletext sets.

No colours at start up 50% of the time on satellite channels. OK in HF and VCR.
Fault 1: Check or replace 7733 on the low state collector in STA. Suspect 5V on 7661 and 2661.

Occasionally no colour.
Fault 1: On the lower side of the quartz remove the screening can and resolder solder joint.

AUDIO

Intermittent no sound.
Fault 1 Check for dry joints on T48 and T52 sound O/P transistors.

No sound.
Fault 1: Replace IC510 (TBA7500).
Fault 2: Check on the IF pin 2 of TDA8425. If 0V, replace C2264 1560uF.
Fault 3: Check the TDA2579A timebase chip also check C2451 (.1UF) which is connected to pin 18 of chip.

No sound or picture.
Fault 1: No LT1 rail to IF panel. Replace D147 with a new diode.
Fault 2: Fault in power supply. ICs CNX83A (7615) and BC817 (7654) are defective.
Fault 3: Check T7039 and if necessary D6039.
Fault 4: Voltages ok. Check IC507 (12V regulator) and TDA1412.
Fault 5: Voltage +148V present. On pin 19 of scart, no video signal. External signal supplied to pin 20 scart is processed well. Replace U1000 (UV816; 4822 210 10365).

Fault 6: No clock pulse (8.86MHz) on pin 28 of IC7350. Replace Q1352 (4822 242 70323). Clock pulse (8.86MHz) on pin 28 of IC7350. Replace IC 7350 (TDA8390/n4; 4822 209 61027).
Modifications:
Remove R3340
Remove R3341
Change R3371 to 1M2
Change R3372 to 680K
Remove D6336.
Fault 7: Check sound amplifier 7615 (TDA152Q/7).
Fault 8: Voltage stabiliser 7610 (L785Z4CV) is S/C. Each B19 and B18.
Fault 9: C2545 (1.2nF) is defective (burnt). Also replace C2546 (8.2nF).
Fault 10: Check voltage at pin 13 of TDA2579. If equal to 0V, capacitor (47nF) S/C at pin 18 of the IC.

No sound or picture, EHT ok.
Fault 1 Check IC507 (12V regulator) and TDA1412.

No sound and blank raster.
Fault 1 Check TR6462 (BF196).

No sound, TDA1521 is ok.
Fault 1 Check if mute is not turned on There should be OV from the base of T7286 and 7285. Pin 10 of 7220 should be high. If there is sound through scart, follow the audio signal 6 and 8 from 7220 and 21 and 22 from 7220.

The sound fails: after changing over to a different channel, the sound is back.
Fault 1 Fit a screening on IC7720.

Vertical interference bars appear on the screen. No sound or picture.
Fault 1: Check the UV816 tuner.

No picture (dark screen). No sound or video/audio scart output (video and audio). Does not respond to the commands from the remote control.
Fault 1: The +9V voltage is weak (+5V). Change F1559, pin 5 of the THT. Test Equipment: voltmeter.

The appliance functions correctly in standard B,G but the sound hums in F standard.
Fault 1 Check the collector T7741 = 0V (F) or 12V (BG).
If the value is intermediate, change T7741.

The sound is defective.
Fault 1: Check C2734 and C2050.

No sound during mono and on track 1.
Fault 1: IC7070 on the stereo module is defective.

In quiet sections, an annoying background buzzing is audible.
Fault 1: Smoothing of S5600-S5605-S5606 (mains filter), as well as the coil and core, with liquid glue (or loctite).

No sound, even with in or out scart.
Fault 1: Replace stereo module.

No sound, picture OK.
Fault 1: Picture is present and the selection of programs functions.
Replace:
IC 7220 (TDA 1521/N4; 4822 209 73853)
IC 7220 (TDA 8405/V2; 4822 209 72371)
IC 7260 (TDA 8425/V1; 4822 209 73213).

Sound mutes spontaneously.
Fault 1: Mount two capacitors of 100 nF (5322 121 42578; in parallel) between pin 10 of IC7220 (stereo decoder) and earth.

No mono sound. Stereo sound ok. No change when warming, cooling or knocking on stereo module.
Fault 1: Check IC7170 on stereo decoder.
Ref. Desc. Part no.
IC7170 U2829B 4822 209 73756

Motor boating. Picture appears after several mins, sound distorted.
Fault 1: Change capacitor (100uF/50V) on the small board beside the power supply transformer.

. No sound nor picture. No line oscillation.

Starting voltage missing in line oscillator. Diode 6455 (LLZ-C2V7; 4822 130 81138) defective.

Initially no picture no sound. Set comes "on" after a while.
Fault 1: Microprocessor 7200 TMP47C634N-2695 heat sensitive. Check 140Volt HT rail - (down to 70 to 80Volts).
Circuit ref. B6

No sound, no picture, no 140V on collector of 7925.
Fault 1: Dry joint on pin 2 of 5921.
Circuit Reference: C16 and D15

No sound, no picture, blank raster.
Fault 1: 7350 BC 848
Circuit reference C2

Left hand channel distortion only with Nicam reception.
Fault 1: Check if the TDA1543 DA converter chip is defective.

Sound fault which sounds like severe crossover distortion in the left hand channel.
Fault 1: Check the TDA1543 DA converter chip.

Low sound on channel A.
Fault 1: Electrolytic 2214 is defective.

Hum in sound in standby.
Fault 1: Replace audio IC (TDA1521).

No sound. Picture has no picture content, only OSD visible. AV PB ok.
Fault 1: Check following components: pin 9 of IC7350 should be ok (FBAS operation), check if FBAS present at pin 25 of IC7350. Check via SVHS socket. From there the signal goes to pin 17 of IC7425, from pin 11 of IC7425 to pin 25 of IC7350.
Fault 2: IC7470 (TDA2579A) is defective.

Audio drop out.
Fault 1: [After changing channels most of the time the sound returns].
Connect 2 capacitors (100nF) in parallel between pins 1-10 and the ground on the stereo decoder on the base board.

No picture. No sound. PSU hums.
Fault 1: S/C between the base and collector on the horizontal transistor. C2550 (390nF) in the high voltage part is S/C.

Grey screen, no picture. Brightness control and video signal work normally. Video signal ok at pin 25 of IC7350.
Fault 1: IC7350 (TDA8390) is defective.

Nasal sound on channels 5 and 6.
Fault 1: Audio IF circuit is defective. Check adjustment of coils 5052 and 5053 on the right of the tuner.

No sound when input connection made via 2 S-VHS phono sockets.
Fault 1: Replace IC7905.

Poor NICAM sound from left hand speaker.
Fault 1: Check IC7530 and IC7531 (LM833).

No sound. Does not respond to commands from both RC and front panel. Error message F2 on screen. Picture ok.
Fault 1: [Occurs after reconstructing PSU with repair kit.] Check uP IC7720. If ok, check +9V voltage for NICAM unit. This voltage comes from cathode on diode D6661 and goes through only one black cable. One end of this cable goes to NICAM circuit and the other is soldered to cathode of D6661, on TV's main board. Check if end of black cable which goes to diode has become detached.

FUNCTION

Volume and brightness control inoperative.
Fault 1 Check IC1 (SAA5010) and R49 (10R).

Ok for a few seconds then shuts down.
Fault 1 D4001 (7 5V) zener is leaky.

TV does not start up.
Fault 1: Low frequency (LF) safety mode and T7284 are defective.

Fault 2: (By disconnecting the line stage and fitting a bulb the 148V increases. FBT has been replaced point S3, 6, 1 and 5 of the FBT have also been disconnected). Check D6653 (leaky). Check D6649 (1N4148) and T7652 (BC558C) to see if the base voltage of T7655=0V and that of 7654=0.6V. Check the control signal on 7545. If poor check 7540 and the driver transformer. Also check without E/W module and 1534.
Fault 3: Suspect 7614 and CNX2645 or check signals on the line BU 7545.

Appliance fails and later comes back unprompted.
Fault 1: Resolder Pin 18 of the line transformer.

The appliance does not function, voltage is fine.
Fault 1: Check D2015 for short circuit.

Works well for a few seconds, then fails.
Fault 1: The zener diode D4001 (7.5V) is leaking.

Tuning does not function, drifts, raster doubles up. Vertical sychronisation fault.
Fault 1: It is possible that C2465 (220µF) was incorrectly fitted (polarity) at the factory.

With high volume the appliance switches spontaneously to standby.
Fault 1: Fit a 6K8 resistor on the monocarrier parallel to C2285 (100UF).

After approx 20 mins operating time appliance switches off. Then no Led. When you switch off completely with the mains switch and wait a time appliance starts again when you switch on.
Fault 1: Fault was dry joints on the line transformer although chassis did not react to knocks as if it was dry joints.

Dead.
Fault 1: Remove connector G15 and connect lamp to +148V. Lamp does not come on.
Replace TS7625 (BUT18AF; 4822 130 61407)
Fault 2: Built-in SOPS repair kit (SBC7020). Apply at the same time 2 diodes (BDY73B) in series between basis and emitter of TS7625 (anode to base). Remove connector G15 and connect lamp to +148V. If lamp does not come on. Replace IC7614 (CNX 83a).
Built-in SOPS repair kit (SBC7020) is not available.

Ref.	Desc.	Part no.
Diode	BDY73B	4822 130 60778
IC7614	CNX83a	4822 130 82034

Fault 3: Check R4059 (BZX79C27).
Fault 4: Check for poor solder joints in the area of 3D6, 2D7, 15A15, 15A16 and R3106.
Fault 5: Check the following: R3106 (R820), R2010 (5K6), R4044 (120K), R3120 (15K) and R4059 (15K).
Fault 6: Check D138 on the line plate and replace fuse 1A on the supply print.
Fault 7: Check lead from IC2510 (TDA1590).
Fault 8: Replace BR101 (BRY56).
Fault 9: Replace the beam current limiter transistor T85 and T86.
Fault 10: Replace IC7720 (TMP47C634N-2475; part no: 4822 310 31844). Important: also fit metal screening with earth on R3738.

Poor functions.
Fault 1: Replace IC7720 (TMP47C634N-2475; 4822 310 31844). Important: also mount metal screening with earth to R3738.

Blocked.
Fault 1: No functions. Replace IC7720 (TMP47C634N-2475; 4822 816 10129). Important: also mount metal screening with earth to R3738 or 9.

No function, standby LED not lit.
Fault 1: [Voltage ok at power supply output except for 5V at 1.5V]. Check 7661, 7663, 6665 and 2661. If ok, check 9V on C of 7661. If not, check 6644, 3661 and 3662.

Switches immediately to protection mode. Functions OK when protection mode is switched off.
Fault 1: D6657 (20V zener diode) is defective.

Set does not start-up after implementing SOPS kit.
Some PWBs are marked showing diode D6653 the wrong way round, the manual may also indicate so. Re-insert diode with the cathode going to the emitter of TS7652 as indicated in the circuit diagram.

Set blocked; no control of functions.
Check solder joints of resonator 1760.

Does not go into standby, white line, red LED flashes.

Fault 1: 5V changes constantly. Zener diode D6690 is 17ohm in both directions. Replace zener diode.

Intermittent start up.
Fault 1: 3143 220k high resistance (or O/C quick start CCT).
Circuit ref. K5
Fault 2: Check for 140V rail. If ok dry joint on pin 14 of L.O.P.T.X.
Circuit Ref. D18

At start up goes immediately into standby. 12C BUS blocks at 5V.
Fault 1: EEPROM X2404 is defective.

If mains switched off when in standby, it does not start up again. 9V disappear in standby, light off (no 5V) but power supply at speed is similar to that in standby.
Fault 1: Check on 7661 E: 5V; C:9V, and B:6V. If not, suspect 2661, 6665, 6662, 3661 to 3663. Check 7614.

Appliance starts intermittently with no standby.
Note: The on-off switch has to be operated several times before the appliance will come on. Operations are then normal until the appliance is put into the standby mode, then it shuts down without even the standby LED being alight.
Fault 1: In the fault condition the h.t. voltage falls to almost zero and a slight whistle comes from the chopper transformer. This suggests that the power supply is in protection state, and upon measuring voltage at base-collector connection between transistors T7656/7655. Voltage here should be zero or slightly negative but is 0.7V, thus shutting power supply. Change diode.

CTV switches on but nothing happens. No sound or picture on the traditional aerial. On the contrary in scart with a dish the CTV has a picture but no sound. No automatic search possible.
Fault 1: Check varicap voltage at point 11 of tuner 1000. Check on IC7020 point 23: int 0V, ext 5.26V. Check the video output (CVBS) at point 14 and 22. Check 7032 and 7044.

Dead, volts on chopper.
Fault 1: Scope line transistor collector. Does the line start and immediately stop ? if so set is in trip. O/C D6560 to disable trip. Find it (a surface mount device) just in front of the metal surround beside the line transformer on the underside of the PCB. If set comes on with low width look for drys on the choke 5549 and for O/C wickman fuse 534.

Dead. LED blinks several times and then goes off.
Fault 1: The 14 volt supply from the line stage is missing.

Only pulsates once. Resistor R3661 in the 5V rail is burnt.
Fault 1: EEPROM and possibly TMP processor are deective.

Set won't start up.
Fault 1: Check TR7652 (BC857C) for O/C and R3652 (220R) for H/R, also check if wrong type of deguass posistor is fitted.
Fault 2: Check for short on the 14V line. This is caused by Q7284 (BC858) surface mounted device.

Flashing standby LED at switch on. LED switches off after a few secs if no action is taken. When pressing RC at switch on LED remains lit after a few secs. No picture. No sound. HT OK.
Fault 1: No 14V. R3580 and R3581 are defective (both 1R).

No function, only hums. Line BU is defective.
Fault 1: [Line output transformer ok]. C2546 at collector of BU is defective.

TV blocks on 600MHZ. If you do a frequency search, it goes through all frequencies but does not find any channels.
Fault 1: Change tuner 7720 and 7770. Check on tuner pin 12:5V, 11:33V. If ok, check on 7020 pin 23: EXT:3.8V; INT:0V. If ok, check video signal on pin 22. Otherwise, suspect 7020.

Starts up again then clicks after a few mins. PSU faled again.
Fault 1: [G110 kit replaced]. Check power supply kit. Suspect solder joints (6617). Check line BU command. If ok, suspect 2545, 6546, 6547. Check 14V on 6580.

Goes into safety mode if it is left in standby then switched on via the switch. Starts normally if speaker or HT O/C.
Fault 1: [Power supply kit changed]. Check 5V on 7661. If low, check 2661 or remove audio module. If ok, check 2266, 2209 and 2208.

Occasionally error message F4.
Fault 1: Remove TXT decoder.
Possible cause is IC7800 on the TXT decoder.
Part no.: 4822 209 62479 Flof Decoder
4822 209 62879 Top Decoder
If error appears again, replace LED IC7720 on the base board.

Part no.: 4822 310 31927.

Error messages F5, F7, F4 occur.
Fault 1: Possibly IC7720 is defective. Part no.: 4822 310 31927

Arcing. Picture tearing. Does not synchronise.
Fault 1: Check 12V on C2465. If low, suspect C2580. If ok, check C2466. If ok, suspect IC7470.

AV switching problems. Scart socket is used as input, sound from external source heard but off-air picture displayed.
Fault 1: Fit a new TMP47C634-2676 chip.

Goes into safety mode.
Fault 1: T7656 is defective, R3560 and R3818 are O/C.
Fault 2: [20V on C2630 + 146V]. Power supply functions if the line time base connector is disconnected]. If the base of T7655 is at 0.7V, check safety modes. Check mini fuse 1534 (E/W), D6561 (E/W), D6592 (line transformer circuit) and T7284 (BC858).

Red standby light then dead at switch on. Collector of T7655 at 0V. Line transformer starts up then goes into safety mode. TV starts up on the variac.
Fault 1: Check D6657 (16V), D6592 (EHT), T7591 (tube output), D6560 (E/W), D6561 (E/W), T8284 (sound).

Intermittently goes into safety mode.
Fault 1: Check if line amplitude and raster varies. If it does, check C2546 (8.2nF or 10nF) and C2545 (1.2nF) on the right of the line transformer.

Snow on screen and no reception. F4 displayed on screen. Green LED lit.
Fault 1: I2C BUS is defective on pins 5 and 6 of IC7770 (PCD8282). Remove memory, tuner, audio board and uP one by one.

Snow on screen and no tuner reception. F3 displayed on screen. Green LED on.
Fault 1: Check I2C BUS. Replace tuner UV816.

No switching into CCIR standard. Display ok in SECAM and PAL/SECAM.
Fault 1: Check T7741 (BC848) for S/C near the uP.

Does not go into standby. Horizontal white line. LED flashes to go into standby.
Fault 1: Check T7502, T7503, T7500, 148V on R3502 and 32V on R3578. Check raster input on base of T7500 (pulse inverted at 0.5V). Check power supply voltages and lines.

Top of TXT waves from side to side.
Fault 1: Check C2829 (47uF) on TXT panel.

No TXT or only first line. Sometimes TXT OK.
Fault 1: Check TXT board for loose contacts. Also check for dry SMD joints behind SAA5231.

Goes dead when switched to standby by RC. No standby LED. Switching on and off at mains, restores normal functions
Fault 1: Check zener diode D6657 (20V).

No switch on with mains switch after switch off after standby. Switching on/off with mains switch OK.
Fault 1: If OK after disconnecting plug(s) of speaker, replace audio IC (TDA1521).

Does not switch to standby. LED turns pink. Picture remains. Sound mutes.
Fault 1: Replace diode D6669 (LL4148).

No brightness, no sound. Raster OK.
Fault 1: [HT OK. No activity on IIC bus]. Replace microprocessor 7720.

Random functions. No picture or display.
Fault 1: Suspect 14V on 2580 (1000uF).

Does not respond to commands from both RC and front panel. No sound. Error message F2 on screen. Picture ok.
Fault 1: [Occurs after reconstructing PSU with repair kit.] Check uP IC7720. If correct, check +9V voltage for NICAM unit. This voltage comes from cathode on diode D6661 and goes through only one black cable. One end of this cable goes to the NICAM circuit and the other is soldered to cathode of D6661, on TV's main board. Check whether the end of the black cable, which goes to the diode, has become detached.

TUNING/MEMORY

Tuning drift after a period of time.
Fault 1 Check TAA550.

Stuck on channel 1.
Fault 1 Poor contact at pin 2, plug 40.

Intermittent memory problem.
Fault 1: Check the wiring.

Poor chroma identification in Pal/Secam. On channels 5, 6 or with VCR, blue or red bands.
Fault 1: Check the connection between pin 4 of IC7350 (TDA8390) and collector TS7316. Check TS7316, R3366 and D6336.

Channels run through.
Fault 1: Check the micro TMP47C634N2476 (482220962161) and its memory with PCD8582 (R3729 10K), (C2714 2.7nf), and with X2404 (remove R3729 and C2724). Make a s/c at position C2724.

Does not tune on some channels.
Fault 1: No tuning, drifting, disappearanc of colour or interference on a certain channel (e.g. channel 5 and 59).
The cause is a poor earth connection of the screening can of the channel selecter. Resolder the screening can.

Tuning unstable.
Fault 1: Voltage on pin 11 U 1000 (Tuner) fixed. Replace U 1000 (UV 816; 4822 210 10365).

Contents of memory lost.
Fault 1: Replace IC7770 (ST24C02CP; 4822 209 62098). Mount metal screening 4822 466 82781 on IC7720 with earth to R3738.

No detection in automatic search. Does not stop. Tuner OK. TDA2549 OK. 33V on tuner OK.
Fault 1: Check +9V, F1559 pin 5 of the line transformer. Check micro TMP47C634 and memory PCD8562.
Fault 2: AFC circuit is defective. Adjust or replace L5034.

No search, when appliance has found a station.
Fault 1: Check positions 5034 and 5035.
Fault 2: If a picture is present, ident voltage at pin 13 of the horizontal oscillator IC and at pin 16 of processor. Check or replace IF filter L5034/5035.

No tuner reception. Search display functions well but appliance does not pick up any channel.
Fault 1: No varicap 33V. Check D6004 (33V) on B4, R003 (18K) on B3 and R3004 (18K) on B2.

Scanning. Not stopping if channel found.
Fault 1: [Pin 13 of TDA2579 at 0V rises to 9V when signal present]. Check C2451 (0.01uF) and IC (TDA2579).

GEOMETRY

E/W correction fault (hour glass picture).
Fault 1: Replace D133 on line panel. Replace L134 if melted. Replace T2150 (BD238) on frame panel. Replace 1A fuse in power supply.
Fault 2: Check for dry joints on L137.
Fault 3: Check 753, 7530, 2526, 2533, 2532. Check 14V on 2580 and 1534.

Cramped at bottom.
Fault 1 Check C2083 (15µF).

Cramped at top.
Fault 1 Check C2072 (4µF).

East/west raster distortion: width and shaping control do not function.
Fault 1 Check D3133 and TR2150.
Fault 2 Dry joint on pin 14 of line output transistor.

Difficult to set up east/west and width controls.
Fault 1: Check D3132.

Fault 2: [jumps a lot, no optimal adjustment possible] replace pot 3525.

Small picture and volts low at F4037 (130V).
Fault 1 Check D4048 (zener diode).

E-W output stage fails as soon as the appliance is switched on. Fuse 1534 (315mA) also fails.
Fault 1: 2SA1359 and BC547 (SMD) are both dead. Replace C2545 and C2546.

The horizontal centering cannot be adjusted correctly. It may have shifted after the appliance has warmed up.
Fault 1 BU508A must be changed.

The picture is indented (horizontally).
Fault 1: The picture is indented. The problem is worse when the G2 adjustment is turned. The line transformer reverberates as well.
Replace the high voltage cable.

Excessive width.
Fault 1: In the case of excessive width, it is possible that C2549 (east/west circuit) is low capacity. To improve reliability an alternative type of capacitor should be used as a replacement. However the dimensions of this capacitor are different from the original and its mounting position on the PCB may have to be modified. Alternative capacitor:
Ref. Desc. Part no.
C2549 10uF/50V, reversible 4822 124 80275
Fault 2: Replace E/W adjustment pot R2535 which is O/C.

Vertical shift incorrect, after replacing a 28" BL-CRT.
Mount in parallel of R3512 a resistor of 2K2 (4822 116 52256) or 2K7 (4822 116 52263).

Intermittent east west.
Fault 1: Transistor 7963 open circuit 2SA 1359.
Circuit ref. G21

Change in picture width, E/W, etc. after replacement of line output transformer, depending on beam current. Checked beam current limiting components. Seems OK.
Fault 1: C2526 is defective.

Pincushion fault.
Fault 1: Check 2533, 2532, 1534. If ok, check 7533 and 7530. Suspect 3520 and 2520.

Low UB. Approx 130V instead of 148V, causing insufficient picture width.
Fault 1: Disconnect deflection plug. Load +148V with 100W lamp to check whether fault originates in PSU or line output stage.

Picture stretched at top, compressed at bottom with black bar. Picture improves when warm.
Fault 1: Replace C2509 (2.2µF/50V).

Insufficient picture height which can be adjusted. Poor E/W.
Fault 1: [148V and sync IC are OK]. Check SMD resistors (1 and 2R2) in raster output stage.

Varying picture width. When picture is darkened, it becomes too wide.
Fault 1: SMD capacitor 2526 (6.8nF) is defective.

E/W adjustment goes straight from min. to max.
Fault 1: Replace pots R3525 and R3521.

Poor horizontal centering. R3593 burns.
Fault 1: [Replaced D6593, D6594, TR7594, TR7593, electrolytics 2594 and 2593. R3593 burnt again at switch on. S/C in TR7593 and D6593]. Horizontal centering adjustment pot 1K and 330R O/C in base.

Hour-glass picture. Picture slightly too wide. Picture width adjustment pot 3525 only adjusts parts of hour-glass.
Fault 1: Replace pot 3525 (10K).

No E/W correction, (fuse 1534 O/C).
Fault 1: 2549 is defective (O/C).

Raster is too small. Picture contents, sound and other functions OK.
Fault 1: [Replaced raster output stage, sync IC, C2506 and C2509 but no result]. SMD resistor 1R in raster output stage O/C.

Picture is too wide with E/W fault. Impossible to correct with pots, adjustments do not work. Fuse 315MA O/C. No voltage on this fuse after its replacement.
Fault 1: Check C2526, C2520, C2551, T7533, T7530 and R3550.

Narrow picture in E/W and N/S after changing line BU and power supply BU.
Fault 1: Check 148V on 2631, 14V on 2580, 32V on 2575, 200V on 6570. If ok check 7533, 7530, 7503 and 7500.

Picture is shifted to the right. Sync does not work.
Fault 1: Replace 7593 and 7594 S/C. 2546, 2547, 2545, 2594 and 2593 must also be replaced.

Width is excessive and varies with brightness level.
Fault 1: Check C2526 (6.8nF) in E-W circuit.

Maximum width, no E-W correction.
Fault 1: Check width control R3525 (10K) for open circuit.

Bottom foldover.
Fault 1: Check C2509 (part 4822 124 40244).

Poor E/W adjustment. Picture is narrow in the middle.
Fault 1: C2520 (68uF) and C2532 (1uF) dry on C1. Also check pots R3525 and R3521.
Fault 2: Replace R3525.

Picture is too wide.
Fault 1: Poor E/W command. Replace R3525 (10K) and T7530 (BC847).

Poor frame linearity when cold. Picture is distorted vertically.
Fault 1: Replace C2509 (2.2uF) and C2506 (470uF) on A2.

No E/W correction. No 14V on emitter of 7533.
Fault 1: Check 6580. Check 3580, 3581, 3582 and 2580.

Field linearity is poor and width varies.
Fault 1: Check C2509 (2.2uF.50V) in field linearity feedback network.

Vertical amplitude is too low.
Fault 1: R3515 (1R) is defective. Also check R3508, R3509, R3510, R3511, R3523 and R3529.

Poor E/W correcton, cannot be adjusted.
Fault 1: Check test points 22 and 23. Replace T7533.

Picture shifted to the right. No adjustment with R3595.
Fault 1: Check SMD transistor 7594.

Slight E/W distortion.
Fault 1: Check capacitors 2693 and 2694.

Poor width regulation with brightness.
Fault 1: [HT constant]. Check surface mounted capacitor C2526 (8.2nF) for leaks.

OTHER

Failure of TDA4600.
Fault 1: Solder C4079 intermittent connections.

Mono/stereo display error.
Fault 1 Adjust the signal on pin 12 of the IC7130 to minimum video with S5132.

Problems with flof TXT.
Fault 1: Cannot find p.811 in spite of it being sent out. TXT header remains with subtitling.
Replace IC7800 (MAB8461P/W107) with a new version (MAB8461P/W196).
Codenumber MAB8461P/W196 4822 209 62479.

No teletext and OSD is hardly visible. The regular picture vibrates if appliance is switched to teletext.
Fault 1: IC TDA8390 does not switch over properly and must be replaced.

Flash over on picture tube print.

Fault 1: Flash over on the picture tube panel can be caused by poor isolation of C2397. Replace C2397 with an item with codenumber 4822 121 41926.

OSD disappears sometimes.
Fault 1: Change C 2758 and C 2702 into 10 pF.

Ticking sound.
Fault 1: Restriction: NICAM only. On some receivers it may be possible to hear a ticking noise in the background when the receiver is in external AV mode. In cases of specific complaint, the phenomena can be reduced by modifying the NICAM panel as follows: 1. Remove chip resistors R3044 and R3045 and cut the print track at pins 14 and 15 of IC7040. 2. Using 100mm lengths of screened cable, connect pin 12 of IC7150 to pin 14 of IC7040 and pin 11 of IC7150 to pin 15 of IC7040. The cable screens can be earthed at pins 1, 2 and 3 of IC7040. 3. Connect a 4n7 capacitor between pin 18 and pin 5 of IC7150 and another 4n7 between pin 20 and pin 5 of IC7150. Keep the leads as short as possible. Code no. 4n7 capacitor 4822 122 30128.

Mono/Stereo-indication switches.
Fault 1: Connect a capacitor (1 uF; 4822 124 20722) and a resistor (1.5 MOhm; 4822 111 50452) in parallel. In series with this circuit a diode (1N4148; 5322 130 30621) is connected (cathode on R/C). Mount this D/RC circuit between pin 3 of IC 7220 (stereo-decoder) and earth (anode to pin 3).
See also Service Information 3/90.

No TXT.
Fault 1: Replace U1003 or U1003.
Desc. Part No.
U1003 4822 212 23371 - no TOP
U1003 4822 212 23519 - TOP
Fault 2: Check C2848.
Fault 3: Check surface mounted link in 12V supply line on TXT panel for dry joint.

Low contrast of teletext.
Fault 1: In cases of specific complaint, the contrast in teletext mode can be increased by removing D6813 (LLZC7V5). D6813 is a chip component mounted on the print side of the teletext decoder panel 1003.

Teletext faults. Characters wrong.
Fault 1: Replace U 1003 (4822 212 23371) no TOP
Replace U 1003 (4822 212 23519).

Page 811 appears spontaneously.
Fault 1: Decoder selects page 811 and blocks. Mount new uP (IC 7800) MAB8461P/W196 (4822 209 62479) on TXT-Decoder.

Set can be turned off with RC, but not turned on. S.B. LED blinks.
Zenerdiode 6657 (LLZ-C20; 4822 130 81143).

OSD partly disappeared from the screen in BL sets.
Modify C2758 and C2702 from 12pF into 10pF (4822 122 31971).

No TXT; oscillator on TXT decoder does not function.
Add C2802, C2803 15pF (4822 122 32504) on the teletext module U1003.

On some appliances, clicking audible in the background when in AV external reception mode.
Restriction: only for NICAM.
Fault 1: This occurence can be reduced by modifying the NICAM board in the following way:
1. Remove chip resistors R3044 and R3045 and cut the solder side at pins 14 and 15 of IC7040.
2. Using 100mm shielded wire, connect pin 12 of IC7150 to pin 14 of the IC7040 and pin 11 of IC7150 to pin 15 of IC7040. The shielding of the wire may be earthed at pins 1, 2 and 3 of IC7040.
3. Connect a capacitor (4n7) between pins 20 and 5 of the IC7150. Keep the connections as short as possible.
Capacitor part no: 4822 122 30128.

When scart socket used as an input with this set, sound from external source but off air picture displayed.
Fault 1: Voltage checks around microcontroller chip IC7720 show that pin 14 goes low when a video signal is played back via the scart socket but pin 38 fails to go high to switch over to video signal. Fit a new chip (TMP47C634-2676). As sound is switched by the I2C bus it is not affected by the fault.

F4 appears in the display.
Fault 1: [EEPROM and processor already replaced. Runs for a short time. If you switch to standby again, F4 appears again. LED flashes. Only noise.] Check 5V. Check power ON Reset. Bridge diode 6665 temporarily. If then appliance runs, transistor 7663 (BC858) is defective.

R3368 and R3369 burn up at switch on.
Fault 1: Disconnect pins 2 and 12 of IC7360 TDA8452 and replace R3368 and R3369 both 15ohm. If they do not burn up and the 12f and 12c rails are now present replace IC7360.

No drive possible via RC. FB ok, front controls ok.
Fault 1: IR receiver is defective. Althought the pulses reach the processor the IR receiver cannot be controlled. Replace photo transistor.

No picture, dark screen. No RC reception. Line transformer ok (CRT heaters lit).
Fault 1: Change T7663 (BC858).

Displays error code F1.
Fault 1: Poor BUS I2C. Check 14V circuit.

Displays error code F3.
Fault 1: BUS I2C is defective. Tuner does not respond.

Displays error code F4.
Fault 1: BUS I2C is defective. Check uP, memory and tuner.

Displays error code F5.
Fault 1: BUS I2C is defective. Check stereo board.

Displays error code F6.
Fault 1: BUS I2C is defective. Check TDA8405 on stereo decoder board.

Poor OSD. Unusual colour of some characters.
Fault 1: Micro O/C on pin 16 of TDA8390.

No display. No picture. Random functions.
Fault 1: Suspect 14V on 2580 (1000uF).

No sound. No response to commands from both RC and front panel. Error message F2 on screen. Picture ok.
Fault 1: [Occurs after reconstructing PSU with repair kit.] Check uP IC7720. If ok, check +9V voltage for NICAM unit. This voltage comes from cathode on diode D6661 and goes through only one black cable. One end of this cable goes to NICAM circuit and the other is soldered to cathode of D6661, on TV's main board. Check if end of black cable which goes to diode has become detached.